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Abstract

Information and communications technologies (ICT) are becoming pervasive in the residential real estate industry and affecting the work lives of real estate agents. Drawing on data from a regional study of the residential real-estate industry in the United States, we focus on the disintermediation or, more accurately, the re-intermediation of real estate agents in the sales process. We examine how real estate agents are (1) taking advantage of new ICT in their work, and (2) protecting themselves from others wishing to displace their position in the real estate value chain. Our analysis draws on two contrasting theoretical approaches to better explain the roles of agents. That is, real estate transactions are conceptualized as economic activities (buy/sell transactions) set within social structures that agents help to develop. Firstly, transaction-cost economics is used to explain the nature of a real estate transaction. From this analysis we develop a set of generic market coordination structures to profile the role of the agent in the real estate transaction process. Secondly, the concept of social capital is used to structure an analysis of ICT-induced changes to the process. Social capital is conceptualized as the set of social resources that an agent possesses that are embedded in relationships. This analysis indicates that real estate agents are using social capital and relational forms of coordination in order to protect and affirm their places within the real estate value chain. These social relationships provide structures that define both the behavior of the agent, buyer, and seller (and other contributors) and the various transactions that make up the sale of a residential property. We conclude by drawing implications for research on disintermediation and for the practices of market intermediaries.

Keywords: transaction cost economics, coordination theory, social capital, disintermediation, re-intermediation, field study, real estate

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Introduction

Numerous pundits, scholars and professional research firms are predicting that the increasing use of electronic commerce is or will be reshaping virtually all industries. One phenomenon that has attracted particular attention is *disintermediation*: the potential that buyers and sellers will find each other directly, rather than through intermediaries. Indeed, some sources go as far as to predict that the widespread adoption of electronic commerce will lead to the disappearance of all human “agents” who “merely” serve to help buyers find sellers (Bakos, 1998; Doherty, 2000; Hess & Kemerer, 1994; Schmitz, 2000). There is, however, a growing realization that the actual situation is more complex and effects will vary from industry to industry (Grover & Ramanlal, 1999; Schmitz, 2000). We use the context of the United States residential real estate industry to help us explore the phenomenon of disintermediation, using two contrasting theoretical perspectives to develop a richer picture of this phenomenon.

Predictions of disintermediation seem to be borne out in certain industries (Hess & Kemerer, 1994). For example, conventional travel agencies are struggling to survive the double blow of airline commission cuts and on-line competition (Lewis, Semeijn, & Talalayevsky, 1998; Lewis & Talalayevsky, 1997). The number of people booking travel on-line is increasing rapidly. According to the Travel Industry Association, between 1997 and 1999 the number of U.S. customers booking travel on-line increased by 62.1 percent. By 2003 on-line travel sales, according to Jupiter, are projected to quadruple to $16.6 billion ("Travel agents threatened", 1999). Dozens of travel-oriented sites, such as Expedia, Preview and Travelocity, have sprung up since 1995. As well, airlines increasingly sell tickets directly on their Websites or through wholly owned outlets, such as Orbitz. However, as airlines take advantage of direct distribution channels such as the Internet, they have drastically decreased the compensation provided to travel agents. Perhaps as a result, between 1997 and 1999, the total number of travel agencies in the USA dropped 8.2 percent (Battey, 2000), even though people are traveling more than ever before ("Travel agents threatened", 1999).

Disintermediation seems to be an emerging possibility in the insurance industry as well. Insurance firms are presently struggling with the role of agents as intermediaries in the insurance sales process. Insurance sales practices have traditionally relied on agents to connect buyers with products, but this situation is beginning to change as insurance companies look to ICT to reach buyers directly. Some major national insurance firms are presently luring customers via the Internet (Fisher, 2000). For example, Allstate Insurance announced plans to sell insurance directly by phone and Internet while laying-off 4,000 employees ("Allstate to layoff", 1999; Lohse, 1999).

We examine the potential for disintermediation in the U. S. residential real estate industry. Real estate agents are intermediaries like travel agents and insurance agents, but real estate is a much more expensive and

complex good than a plane ticket or insurance policy. We contrast two perspectives on disintermediation, a transaction-cost perspective (e.g., Wigand, 1997; Williamson, 1981) and a social-capital perspective (e.g., Baker, 1984; Burt, 2000; Tsai & Ghoshal, 1998). The first perspective focuses on the cost of individual transactions under different governance mechanisms, the second on how transactions are embedded in and affected by their social context and by the network of relations that make up this context.

Transaction-cost economics was chosen for our analysis because many contemporary analyses of electronic commerce have focused on the costs of carrying out transactions under different circumstances, specifically with and without electronic support (Choudhury, Hartzel, & Konsynski, 1998; Grover & Ramanlal, 1999; Hess & Kemerer, 1994). This work generally draws on the transaction-cost framework proposed by Williamson (1981), but considers characteristics of the transaction beyond the nature of the good, and coordination structures other than the choice between markets and hierarchies. We will use the generic market coordination structures described by Malone and Smith (1988) to profile the role of the agent in the real estate transaction process.

Our second perspective views transactions as embedded in and affected by a network of social relationships (Granovetter, 1973; 1985; Hansen, 1999; Krackhardt, 1990; Krackhardt & Stern, 1988). Sawyer et al. (1999) and Crowston and Wigand (1999) have conceptualized real estate as an economic activity (a buy/sell transaction) set within social structures which agents help to develop. These social structures can be seen in the networks of relationships among agents, buyers, sellers, other real estate professionals, and others. These networks help to define the behavior of the agent, buyer, and seller (and other contributors) and it is via these links that the various transactions that make up the sale of a residential property occur. We draw on the notion of social capital, that is, the set of resources embedded in relationships (Burt, 2000; Tsai & Ghoshal, 1998). A social-capital perspective treats real estate as a process of using one's relationships with others to draw on their information to complete a purchase. This process requires a series of negotiations that arise out of, and are structured by, interpersonal ties among participants in social networks.

The rest of this paper continues in four sections. In the first section we briefly review literature on the two contrasting perspectives introduced above and consider how they might be applied to the real estate industry. We follow this discussion by introducing our research setting, methodology and data sources. In the third section, we present the findings from our fieldwork, both descriptive and interpretive. We conclude by comparing the implications of the two perspectives for further research on electronic commerce driven disintermediation and for the practice of market intermediaries.

Theoretical Perspectives on ICT uses in Residential Real Estate

In this section we present two contrasting perspectives on ICT use. The first perspective focuses on the cost and economics of transactions, the second on how transactions are embedded in and affected by their social context. A primary difference between these two perspectives is the way they conceptualize information. The transaction-

cost perspective presents information as discreet and relocatable while the social-capital perspective sees information as intimately embedded into the people in a social network.

A second difference between the two perspectives is in the view they represent the social context. By social context we mean the larger milieu in which the phenomena of interest occurs. This context has temporal, physical, and behavioral elements that shape action. The transaction-cost perspective de-emphasizes the social context, thus we label this a *socially thin* perspective. Conversely, we label the social-capital perspective as *socially rich*. The transaction-cost or socially thin framework lends itself to a functional perspective for comparison purposes, whereas the social capital or socially rich framework lends itself to an interpretive perspective for comparison purposes. In making this comparison, we explicitly recognize that both perspectives offer unique and valuable perspectives for studying an industry's core processes. Using both approaches provides a more conceptually complete and balanced picture of the role of transactions, their relation to social context, and the set of actions needed to close a house.

Transaction-cost—A socially thin perspective

The basic concepts underlying transaction-cost economics were developed by Coase (1937) and further refined by Williamson (1981). The fundamental unit of analysis in transaction-cost theory is a transaction, defined as the transfer of property rights. Research in this perspective typically considers which governance mechanism—market or hierarchy—is the least costly way to carry out a transaction, given the characteristics of the goods and participants. Market governance means that a search is made for the lowest-cost supplier each time a particular good is acquired. For example, a company needing some commodity parts might request bids from potential suppliers whenever a supply is needed. Hierarchical governance means that the goods are made within the company, allowing for hierarchical (i.e., managerial) control of their manufacture. For example, a company might own the equipment and employ the workers needed to manufacture subcomponents of its product.

Transaction costs include all resources that have to be sacrificed in order to arrive at a mutually acceptable agreement of the exchange of goods and services between two or more parties (Wigand, Picot, & Reichwald, 1997, p. 269). One may identify four different types of costs (Wigand et al., 1997):

- Contact costs (such as searching for information);
- Contracting costs (such as negotiating and formulating a contract);
- Monitoring costs (such as checking quality, quantity, prices, deadlines, maintaining secrecy); and
- Adaptation costs (such as changes during the validity of the agreement).

These transaction costs are assumed to be lower for hierarchical governance, since it is not necessary to search for a supplier or negotiate a new contract, and there is no possibility of "hold up" in case changes are needed to the contract. Set against these transaction costs is the cost of the asset itself. It is assumed that the cost of the asset will be least when it is acquired in the market, e.g., because of the possibility of acquiring the good from the lowest cost

supplier, the possibility for the supplier to take advantages of economies of scale, and so forth. The choice of governance mechanism depends on the balance between these costs.

To determine the balance for a particular transaction, it is necessary to take into account the particulars of the transaction. According to the transaction-cost approach, transactions may be differentiated in several ways. Such transaction attributes may include (see, e. g., Milgrom & Roberts, 1992; Wigand et al., 1997) the:

1. **specificity** of the asset involved in the transaction (defined as the difference between the best and second-best use of the asset);
2. **frequency** with which similar transactions occur;
3. **duration** or period of time over which transactions are repeated;
4. **complexity** of the transaction;
5. **uncertainty** of the transaction (e.g., uncertainty about what performance will be required);
6. **difficulty of measuring performance** in the transaction;
7. **connectedness** of the transaction to other transactions involving other people; and
8. **information impactedness** (defined as asymmetric information distribution with the potential of opportunistic exploitation).

In general, the higher a transaction scores along these dimensions, the higher the transaction cost is likely to be. As a result, transactions high on these measures are good candidates for hierarchical governance, while transactions low on these measures are candidates for market governance. For example, coal, water and energy have very low asset specificity, low transaction complexity, low uncertainty, easy measurement of performance and low information impactedness. Correspondingly, these commodity goods are typically acquired in the market. On the other hand, for General Motors, car bodies had high asset specificity, high frequency and high complexity and so General Motors bought its supplier, Fisher Body, in order to use hierarchical governance for this transaction (Chandler, 1962).

Social capital —A socially rich perspective

The second perspective we present also considers transactions, but rather than treating them as the unit of analysis, focuses on the way transactions are embedded in social networks which give rise to social capital. By social network we mean collected set of social relationships (also known as ties) among people (Burt, 2000). This changes the unit of analysis to the relations in the social network (and its use). Because of this explicit attention to how transactions are embedded into social networks and the contexts in which these networks form, we label this view “socially rich.” In this view transactions cannot be considered in isolation; rather, they must be seen as occurring within existing networks of relationships, embedded within social structures and involving information from many sources who are part of the social fabric in which the transactions and processes occur (Burt, 1988).

Social capital is an outgrowth of concepts of human capital that has roots in both sociology and economics. For example, Swedberg (1994) and Powell and Smith-Doerr, (1994), among others, have argued for the re-

integration of these two conceptual perspectives as they arose in response to our need to understand how people interact. According to Putnam (1993), the first use of the term social capital was by Jacobs (1961, p. 138). Today, the concept of human capital is widely used and understood by both sociologists and economists. In this context, the concept of "capital" is reflected less in land, factories, tools and machines than, more and more, in the knowledge and skills of human beings (Becker, 1975). Coleman (1988) reasoned that in addition to knowledge and skills, a distinct portion of human capital has to do with individuals' ability to associate with each other, a facet critical not only to economic aspects of life, but to virtually every other realm of social existence as well. This view implies that social capital is one measure of the ability of people to work together for common purposes in groups and organizations (1972; Coleman, 1988; see also Putnam, 1993; 1995). Seen this way, all economic transactions are socially embedded (Baker, 1984; Granovetter, 1973, 1985; Hansen, 1999). Social structures thus encompass the set of patterns, relations and artifacts that both shape and evolve through the interaction among people. While these social structures are difficult to define, and constantly evolving since they incorporate physical, temporal and intangible elements, they are also fundamental to how people interact (White, 1981).

This ability to associate—to develop structural relations—varies greatly from culture to culture, but it is determined by the degree to which communities share norms and values and are able to subordinate individual interests to those of larger groups (Burt, 1982). An outgrowth of such shared value is trust, an essential ingredient in any form of social capital, which, in turn, has a lasting, large and measurable value. Trust between members of a community permits a wide variety of social and business relationships to evolve. Contrarily, individuals who do not trust each other tend to cooperate only in settings with formal rules and regulations. These rules and regulations have to be agreed upon, negotiated, litigated and often enforced. The resulting legal apparatus that must to be put in place as a substitute of trust is a major component of the "transaction costs" identified by the economist (Swedberg, 1994).

The social structures of interest to us for this work are those sets of relationships that help to define the way homes are sold in the US residential real estate industry. In particular, we focus on the agent's use of social networks to help them develop and use their social capital relative to the set of processes that comprise a real estate transaction. The premise here is that social structures both give rise to and represent social capital (Tsai & Ghoshal, 1998). For this work, social capital means the set of social resources embedded in relationships (Tsai & Ghoshal, 1998, p. 464). Social capital and the underlying network of social relations thus provide a useful conceptual perspective for understanding the contribution of agents to the real estate process.

Social capital can be described by three dimensions of the social connections among people: structure, relation, and cognitive (Tsai & Ghoshal, 1998; Wellman, 1988, pp. 31-40). The structural dimension involves social interaction that the agent uses to gain access, information, or resources. The relational dimension encompasses qualities that arise from interactions (such as trust and loyalty). The cognitive dimension includes attributes such as shared norms, codes of action, and convergence or similarity of views. Social capital is important for people who have more work autonomy—which is why most studies of social capital focus on managers and knowledge workers (Burt, 1997).

Summary: ICT Use and Disintermediation

In this section we presented two perspectives on ICT use and the potential for disintermediation in the context of residential real estate. The first perspective focused on the cost of individual transactions and the second on how transactions are embedded into the social context. The key differences between the transaction perspective and social perspective are summarized in Table 1. The transaction-cost perspective suggests that a transaction such as a real estate closing can be isolated and examined independent of its context. The role of information is external to those that use it and intermediaries are thus replaceable if other information conveyances can be found. The agent's role is contractual and the social structures are both relatively unimportant. The role of ICT is thus as a decoupler: it serves as a new means of conveyance.

The social-capital perspective suggests that the real estate closing is embedded in a set of social relations that arise from complex ties among a range of stakeholders. Information needed to complete the closing is intrinsic to the stakeholders themselves, is shared across these social networks, and is held internally within those networks. . In such a view, the agent's role is defined by relationships. The social structures that shape this definition are the primary means by which agents help to enact the buy and sell activities that a house closing needs. Finally, ICT can serve as a magnifier of social capital and its use may help differentiate successful and unsuccessful real estate agents.

Data and methods

Our approach to understanding information-intensive industries demands insight into both the costs of transactions and the social networks in which the transactions take place. We start by describing the industry setting for our study. We focused our data collection on a particular regional setting, drawing our data from one metropolitan area in the northeast United States. By doing this, we can gather data that informs both theoretical perspectives, and minimize the distortions due to the variations in local customs and laws that a multi-region study might face. In the rest of this section, we outline our data collection methods and data analysis approaches. Given the exploratory nature of this work coupled with our desire to build a rich picture of how real estate agents practice their craft, we pursued this work through intensive research method of fieldwork (Jackson, 1987).

Research Setting The United States Residential Real Estate Industry

Our study was carried out in the U.S. residential real estate industry. The real estate industry is a most appropriate setting for our study because it is:

- information-intensive and information-driven;
- an intermediated market (agents and brokers connect buyers and sellers);
- based on agent-buyer-seller relationships;
- transaction-based, with high value and asset specificity; and

- currently experiencing ICT-induced changes, including predictions of disintermediation.

Certainly, residential real estate is an information-intensive business. The industry highlights the role of information and underlying computing and communications technologies (Baen & Guttery, 1997; Tucillo, 1997). Agents connect buyers to sellers and do so through control and dissemination of information provided through the Multiple Listing Service (MLS). Agents are valued for the information skills they can bring to bear on marketing and finding properties and on consummating sales. However, since agents and real-estate firms are pure market-intermediaries, their positions are threatened by new ways for buyers and sellers to find one another.

Indeed, the traditional work processes of real estate agents have been and continue to be influenced and shaped by the use of ICT. Agents have rapidly embraced new ICT that might give them an advantage, such as computer databases, geographical information systems, pagers, cellular phones, and most recently, e-mail and the World Wide Web (Crowston & Wigand, 1999). Both our data and other contemporary literature (e.g., Buxmann & Gebauer, 1998; Crowston & Wigand, 1999) suggest that knowledgeable agents are concerned about their future roles in the face of the potential changes to real estate propelled by ICT use. Of course, as we highlight above, concerns about the impacts of ICT are not unique to the real estate industry. Other industries, e.g., automobile sales, travel agencies and financial services, can be observed undergoing similar ICT-influenced changes.

Data Collection Methods

The goal of our research is to better understand how residential real estate agents work and how their work is being affected by ICT use. To support this, our research approach focused on documenting and understanding how the agents use various ICT in their work. We used the standard data collection methods of fieldwork: interviewing (both semi-structured and structured), participant observation, and archival records collection (Jackson, 1987). Field notes were prepared after every field encounter. These notes have two parts: a chronology of action and an interpretation of these actions. The chronology represents a factual recounting of the observation period from the observer's perspective. The interpretive notes provide a more free-flowing account of the intuitions, ideas, and interactions that arose during, and because of, the observation.

As we outlined above, we focused on one local market that encompasses a medium-sized city and its suburbs. This focus allows for more convenient data collection. A series of 13 interviews and several observations, detailed below, totaling twenty days of fieldwork, were conducted from September 1998 through December 1998 (see Table 2). We also collected all memos, correspondence, and other printed or written material that we could. Often, these "organizational droppings" provided insight into observed behaviors, allowed for historical accuracy and progression, and set out future issues. Current archival data collection includes items provided to us by the agents/interviewees, material sent along by the local board of realtors, and extensive library research by two graduate students.

We used fieldwork to gather data from the range of participants involved in a real estate closing process. This includes interviews of real estate agents, real estate brokers, a real estate franchise owner, a broker/owner, the local realty association president, the president of the local MLS, and several people involved in a typical closing (see Table 2). Our interviewees included four women and nine men, and we spoke with several key informants on multiple occasions (Seidler, 1974). Interviewees include experienced and relatively new agents, technically sophisticated and technically naive agents, broker/owners and franchise managers. After each interview, we asked our informants to recommend others to talk to (snowball sampling). We continued to interview agents until we reached theoretic saturation on the key constructs of transaction costs and social capital (Miles and Huberman, 1994). We also spoke with a number of the participants in the real estate closing process such as inspectors and appraisers to check the real estate agent's responses (and found that these people's responses corroborated the real estate agent's perspectives).

In addition to the interviews we observed five meetings of the local board of realtors committee on new ICT. In each meeting, the role and importance of such ICT as Internet-based applications and conducting real estate business via the Web were addressed directly or indirectly. We followed up by meeting individually with committee members who represented both points of view on these various ICT issues. We gathered archival documents from all interviewees, materials from the meetings, additional material from a range of sources such as the local and national associations for realtors, web sites and the existing professional and academic literature.

Insert Table 2 about here

Data Analysis

Analysis draws on field notes, transcriptions from the interviews and observations, and archival records and material collected during the fieldwork. Two analysis techniques are used to analyze this corpus: interim documentation and explanatory event matrices (Miles, 1979; Miles & Huberman, 1994). Interim documentation arises from the reflective, ongoing analysis of field notes. This analysis was done individually by each researcher as well as by all researchers as a group. This technique enabled the synthesis of data to support and refute interim propositions. This interim analysis will also help to guide future data collection efforts. Explanatory event matrices relate constructs to events, organizing a rich set of data to respond to propositions (Miles & Huberman, 1994). Data are used to populate the cells, with the other axis being sources of data. This technique demands an *a priori* theoretical (or at least categorical) set of constructs to serve as one axis of the matrix. And, as we have discussed, this analysis is driven by the elements of the real estate closing transaction and by the social capital constructs in which this real estate transaction is embedded.

Results

In this section, we present the results of our fieldwork. We will first describe the industry as we have come to understand it, then discuss the increased use of ICT in this industry and conclude the presenting some apparent changes in the role of agents.

Overview of the residential real estate industry

We will first briefly review the structure of the real estate industry in the United States, then outline the stages in a residential real estate transaction. What follows is a generic description that touches upon the common aspects of the set of steps that result in a sale of a house (the "closing"). Law and the regulations of professional societies govern real estate work, so the process we describe is specific to the United States and is further differentiated by state and local laws, regional and local customs and legal precedent.

The role of real estate agents is to bring together the seller and buyer of a property and to advise both of these principals, independently, regarding their responsibilities in the transaction. In the U.S. there are typically two agents involved in a transaction. The listing agent (or seller's agent) assists a seller in marketing a property, by helping to determine an asking price, guiding the seller to make the property attractive, advertising it and screening potential buyers. When offers to buy the property are received, the seller's agent advises in the negotiations and details of the transaction.

The second agent helps a buyer find suitable properties among those offered for sale and narrow the selection to a specific property. Usually the buyer physically inspects several potential properties before deciding which to buy; the second agent makes the arrangements for these visits and accompanies the buyer. Once a property is selected, the second agent provides advice on making an offer to purchase the property and helps in the negotiations and details of the transaction. When an offer is made and accepted there are typically a set of contingencies on the contract that need to be addressed. These contingencies typically include the buyer's financing, inspection and appraisal of the property, and so forth. An agent typically helps by providing access to resources to address these issues. For example, an agent might refer a buyer to a lender, house inspector or other necessary professionals.

Most agents share listings through a multiple listing service (MLS). After a listing agent signs a contract with the seller of a property, the agent enters a description of the property in the MLS database. Originally, the MLS was a printed book combining listings from all member agencies. Today, MLS systems are computerized databases. The MLS for a particular region is usually owned by the local realtors' organization (board) but typically operated by a specialized MLS company. Most of these MLS databases are based on proprietary technology and are developed to handle specific regional issues. Currently this degree of customization makes it difficult for an MLS database system to easily interoperate with others.

Agents who are members of the MLS can search the database for properties that meet their clients' needs, and can more easily show properties. The door key to many MLS-listed properties is made available to other members of the MLS, e.g., in a "MLS lock box" to which all members have access, attached to the front door handle of the property. The lock box can record all accesses to the key, providing the selling agent a record of which other agents have viewed the property. In other words, the MLS is much more than just an information repository, since it includes services and agreements that shape the relationship between agents.

In most cases the seller pays both agents. When listing a property, the seller contracts to pay the seller's agent a commission, usually a percentage of the sales price, when the transaction closes. These commissions are typically in the range of five to seven percent of the value of the property. Thus, while exact figures are not kept, using six percent as a base commission, in 1998 total commissions exceeded $38 Billion (and in 1999 grew to be greater than $41 Billion) (current exact sale price and sales volume data are available on-line from the National Association of Realtors at http://nar.realtor.com/research/home.htm). In residential real estate, the seller agrees to pay the commission even if the seller's agent does not find the eventual buyer. As a result, an agent can simply accept a listing and wait for a buyer to emerge. This somewhat lopsided relationship in favor of the agent may have consequences for trust perceptions and may create potential conflicts of interest in the agent's relationships with buyers and sellers. However, a seller's agent is considered to owe a fiduciary duty to the seller, which includes the responsibility to provide a reasonable level of effort.

A buyer need not have any contractual agreement with an agent. When a buyer buys a property listed in the MLS, the MLS agreement among agents provides that that an agent who introduces the buyer be paid half of the seller's agent's commission. Again, the MLS goes far beyond a simple information conduit to include these agreements. Because the seller pays both agents, traditionally both agents owe a fiduciary duty only to the seller, creating a difference of interest between the buyer and an agent with whom they may be working. For example, an agent must disclose to the seller the maximum they think the buyer would be willing to pay for the property, even though this is clearly not in the best interests of the buyer. However, a buyer can independently contract with an agent for what is called buyer's agency. In this case, if a buyer purchases a property offered directly by a seller (a for-sale-by-owner or FSBO), the buyer must pay the agent's commission. If the buyer buys an MLS property, then the seller pays the commission as usual. In return for the guaranteed commission, the buyer's agent owes a fiduciary duty to the buyer rather than the seller.

In all states in the United States, only a person with a broker's license can convey real property, so agents are affiliated with a real estate firm that employs, or is headed by, a broker. Real estate firms range in size from a single agent-broker to dozens of agents along with clerical and managerial staff. Some agencies are franchises of national chains (e.g., Better Homes and Gardens or RE/Max); others are local. Agents enter into listing contracts on behalf of the broker, get a variety of services from the firm and, in return, give the firm a share of their commissions. These relationships are contractual, as agents are independent contractors rather than employees of the agency. A highly productive agent has the bargaining power to negotiate for additional services or a more favorable division of

the commission. In other words, the organizational structure of the real estate industry is primarily contractual, agents essentially acting as "companies of one." Independent agent-brokers provide their own resources and develop their own network. Independent real estate agents do not have to share their commissions with an agency, but do not have access to the resources of the agency as an affiliated agent does.

Increased use of ICT in the real estate industry

The increased use of ICT in residential real estate encompasses both information and communication technologies. The primary increase in information technology seems to be the use of the web to display house listings. A second increase is the use of advanced search features and interfaces to access the online MLS. Our research to date suggests that the ways in which real estate agents access the MLS and use the advanced searching, querying and reporting features that the current forms of MLS access software allows is worth additional attention. The increased use of communication technologies is seen in the nearly pervasive use of cellular phones and in the growing interconnection of traditional phone service, voice mail, cellular phones, pagers, and even email as an integrated telecommunication system that delivers all forms of communication to the agent as she drives around town.

Of course the increased use of ICT also increased support needed for maintenance, data entry and record keeping. Many agents look to the local real estate franchise or broker/owner who holds their real estate license for such support. This has the potential to change the dynamic between the agency and the individual agent, moving the local real estate agency into a larger role of providing critical (and expensive) ICT infrastructure for agents. And, increasingly, these local real estate agencies are franchises of national-level organizations such as Prudential, Better Homes and Gardens and RE/Max.

Benjamin and Wigand (1995), Sarkar, Butler and Steinfield (1995), Bakos (1998), Wigand (1997) and Gellman (1996) have all hypothesized that the advent of networked ICT such as the Internet might enable electronic markets, perhaps resulting in decreased coordination costs and changes in the value chain. One potential advantage of electronic markets is possibility of designing value chains that require less physical intermediation between producers and consumers (e.g., Choudhury et al., 1998). Given that residential agents act as pure market-intermediaries (connecting buyers and sellers but rarely buying and selling themselves), their positions are potentially threatened when ICT provide new ways for buyers and sellers to find one another (Neches, Neches, Postel, Tenenbaum, & Frank, n.d.). The growth of real estate commerce on the Internet has attracted special interest (see, e.g., Crowston & Wigand, 1999).

Of particular relevance for this research are the numerous Web sites (more than 3,600 National Association of Realtors, 1998) being developed to support various aspects of the real estate sales process. Numerous MLS systems, as well as advertisements for houses sold directly by owners without a real estate agent (for-sale-by-owner, or FSBO), can be found on the Web. For example, Homehunter (www.homehunter.com) links to real estate classified advertisements in thirty-one daily Knight-Ridder newspapers. Abele's Owner's Network

(www.owners.com) lists about 35,000 houses for sale by owner, with expectations for this to double within the year. Such services are directed to consumers trying to make an end-run around the MLS cartel. Rather than paying a commission, sellers pay only for advertising. A listing in Owners.com without pictures is free; packages including on-line pictures and physical yard signs cost $65 to $115.

Some non-traditional players are beginning to enter this industry. For example, Microsoft's Homeadvisor (homeadvisor.msn.com) features a database of more than 500,000 homes drawn from regional MLS systems. The site offers specific geographic mapping, including such statistics as the neighborhoods' median age and income, ratings of local schools, and frequency of crime. Other services, such as HomeScout Real Estate Search (www.homescout.com), integrate information from multiple sources. Such Web-based services suggest that there is some evolution towards the uses of electronic markets to support buyers finding sellers by searching a database of offerings (Crowston, 1996). Combining access to both the MLS system and FSBO homes, as HomeScout does, means that buyers may not even be aware of the status of a house they are considering.

Many professionals are involved in the final details required before closing a real estate transaction. Agents increasingly facilitate transactions by coordinating a web of other service providers for their clients, such as building inspectors, appraisers, loan officers and lawyers. Agents add value for their clients by quickly assembling the necessary professionals, thus providing one-stop shopping.

Many of these supporting services are increasingly available via the Web. Fletcher (1997) points to several sites that offer appraisals. For example, Experian Information Solution (www.experian.com) sells reports of the assessed value of a property and the prices of comparable houses. Yahoo (realestate.yahoo.com) offers reports of home sales for free. Overby (1997) reviews a selection of mortgage sites. Mortgage origination on the Internet has reached one percent of total originations in the United States, according to California-based Myers Internet services (www.myer.com). Warren Myer, company CEO, said that the company expects this figure to increase to 2.5 percent in 1998, 5 percent in 1999 and to reach 12 percent by the year 2001 (Myer, 1997). Many real estate Web sites provide links to these services. For example, Homeadvisor.com includes an integrated mortgage finance component, which permits users to evaluate lenders' offerings and, while on-line at the Web site, to actually qualify for a loan. Finet Holdings has gone beyond linking its financial services to the emerging real estate sites. This company built its own network to automate the entire real estate transaction process. Its subsidiary, the Property Transaction Network (PTN) (www.theptn.com) attempts to bring real estate agents and consumers together with real estate services and insurance providers, while its finance site, www.iqualify.com, provides instant loan approval.

Many real estate agents have begun to realize the potential disruption of the Web (Bottenberg, n.d.; Harper, 1997; Self, 1997). Some are adopting these new communications channels for their own use. For example, one agent in the vicinity of San Francisco, Carol Lucas, launched her own Web site in December 1996 and states that 75 percent of her business is a result of her Web presence (Nelson, 1998). Our work suggests that other agents are stressing individual service and creating other value-adding mechanisms, such as buyer-broker relationships, connections to other house-buying services, buy/sell deals, and guarantees.

Apparent changes in the role of real estate agents

Three major implications can be drawn concern the ways in which the traditional role of real estate agents as information intermediaries is being contested. Until recently, the only way a potential buyer could easily identify houses for sale was by working with an agent who could search the MLS database. The listing data were an important resource and source of information-based power for the agent and, therefore, closely held. For example, agents pointed out that as recently as the early 1990's, it was common practice to allow *no* customer access to the MLS (print or electronic), making the MLS and the agent a *de facto* information monopoly.

Recently, this control has been weakened by the development of alternative sources of listing information. In particular, the Internet reduces the cost of some communications. Some individual realtors and for-sale-by-owner listing sites are taking advantage of the new medium to more widely disseminate their listings. Such actions seem inconsistent with the view of the listing information as something to be closely controlled. However, from the point of view of a single agent trying to sell houses, listings are advertisements to be made available to as large an audience as possible. Given these developments, many MLS operators and real estate agencies seem to have also decided to use this new medium to make MLS data publicly available. After all, the only way for a listing to get into the MLS is by contract with an agent, so widespread publication does not obviate the need for listing agents, who ultimately control listing information. Thus, it is common to see MLS data about a single property in multiple places. For example, such data could be listed on www.realtor.com, an agency's corporate Web site, a collaborative Web site (with the local newspaper) and/or on the individual (listing) agent's personal Web site.

On the other hand, the data also show that real estate agents seem to play an increasing role in "process support." That is, as the contractual complexity of the real estate process increases, real estate agents are valued for their ability to guide the buyer and seller through the transaction. The legal as well as financial implications embedded within these changes in real estate processes are not always clear, and agents and brokerages are still trying to define and specify these changes. This process support is important for most buyers/sellers since most buy or sell homes infrequently. As a result of these developments, the traditional roles of the real estate agent are being redefined. It appears that agents are increasingly a guide and hand-holder in this process. Moreover, these developments highlight how the social structure, personal contacts and local knowledge increase the value added by the agents. Figure 5 presents a model highlighting the structural dimension of agent social capital. In this figure, the basic buy/sell transaction is shown embedded in a network of other relationships. In essence, the presence of the agent and her ability to bring together the network of connections that a closing demands creates the market (Swedberg, 1994).

The data provide some examples of the active management of both weak and strong ties and, thus, of social capital. For example, in our interviews we learned that agents classify people as *suspects*, *prospects*, *customers* or *clients* depending on the degree of their relationship, and then treat people in these categories in specific ways. A buyer's agent sounds out the client in several ways to determine their needs, drawing specific information based on

the interpretive schema of the agent. The robustness and complexity of the agent's interpretive scheme in conducting this information gathering appears to be a major differentiator among agents (Lamb, 1997).

Moreover, agents also carefully construct a set of strong ties to such professionals as real estate lawyers, mortgage brokers and house inspectors. Each agent maintains several of each of these professionals in a slowly evolving and symbiotic social network. An agent may have three or four lawyers in her network and add a new tie only if one of the existing links begins to weaken (by being too busy or not performing to the level expected). This type of action reflects the cognitive and relational aspects of social capital (Tsai & Ghoshal, 1998).

Discussion

In this section we first discuss the findings from each perspective. We then provide an integrated discussion in which we highlight the contributions of both perspectives and the relationships among them.

A transaction-cost perspective

In our discussion of the transaction-cost perspective, we noted how particular transaction characteristics suggest the use of particular governance mechanisms. Analyzed from this perspective, a real estate transaction exhibits a mix of characteristics, leading to mixed recommendations. Houses differ widely along numerous dimensions (size, location, features), which makes them hard to describe succinctly and increases their asset specificity. Real-estate transactions are complex, with somewhat high uncertainty and difficulty in measuring outcomes. Finally, transactions are characterized by high information impactedness, since sellers typically know much more about their houses than buyers can easily find out. From the perspective of transaction-cost theory, these characteristics of the real estate transaction would suggest that real estate will have very high transaction costs. Indeed, the nearly $100M/year in commissions earned by real estate agents in our research area (based on sales data and commission fees from this region) can be seen as transaction costs. A transaction-cost perspective thus leads to the suggestion that transaction costs would be reduced if hierarchical rather than market governance mechanisms could be used. On the other hand, the low frequency of the transaction requires that real estate be primarily a market-based activity, since it would be impractical for an individual who rarely buys a house to own the ability to make one.

While transaction-cost economics provides mixed suggestions for the governance mechanism to adopt, the principles of this perspective can provide a basis for reducing the transaction cost. One view of the role of real estate agents is that they help reduce the transaction cost for an individual buyer. For example, an agent can reduce contact cost by use of the MLS, provide standardized contracts to minimize contracting cost, monitor performance, and so on. Agents might also address some of the transaction attributes, e.g., by providing specialized knowledge to help buyers more quickly determine if a house is appropriate (thus managing asset specificity), providing transaction support (thus managing transaction complexity and information impactedness), and so on. Clearly, transaction costs

cannot be entirely avoided, since agents must be paid, but the cost of the agent could be less than the transaction costs borne by a buyer who does not use an agent (Schmitz, 2000).

Researchers have considered additional factors within this basic transaction-cost framework. In particular, Malone and Smith (1988) analyzed the effects of the cost of communications and the reliability of those performing the tasks. They describe four generic structures and rank them in terms of production costs, coordination costs, and vulnerability costs. Of the four models, the centralized market model depicted in Figure 1 is closest to the typical residential real estate process. The customers contact the real estate agent, who sets the process in play by coordinating the interaction among other value added players in the real estate process. In this model, the real estate agent is the intermediary between the customer and the seller in the process. Figure 2 offers a more realistic model, showing the role of the MLS in centralizing the real estate process, as will be discussed below. The MLS allows buyers and sellers in contact with only a single agent to still share information about available listings.

Insert Figure 1 and Figure 2 about here

We might ask, however, what keeps the consumer from circumnavigating the agent to access other value added players directly? The results of accessing other players directly is described by the decentralized market model of Malone and Smith (1988), shown in Figure 3 direct connection between buyers and sellers. The number of required communications channels in the decentralized market is exponentially greater than in the centralized market model, reflecting the increased cost and decreased efficiency of this approach, especially compared to Figure 2.

Insert Figure 3 about here

Malone and Smith's analysis also addresses the effect of new forms of information and communication technologies. Buyers in a decentralized market face a high cost for communications, but this cost can be reduced by the use of technology. For example, the MLS makes it possible for an agent to have complete information about houses offered without the cost of contacting each seller or agent personally. A similar transition is now unfolding for individual buyers. Historically, buyers did not have direct access to the MLS information, because of the cost of reproducing the paper copies and because restricting access protected the position of agents, *de facto* making the MLS and its surrounding processes an information monopoly. However, because of the substantial reduction in communications costs and because many agents share MLS information with buyers as a means of advertising their expertise, many MLS systems or MLS-derived house descriptions are now available on the Internet (Crowston & Wigand, 1999).

A transaction-cost perspective suggests that a new structure for the industry may be emerging as a result of new ICT, as shown in Figure 4. In this structure, buyers and sellers can contact each other directly, as in the decentralized market of Figure 3, but use the Web and the myriad real estate-related sites to avoid incurring the cost

of maintaining individual communications ties. Because this new structure also avoids the cost of hiring agents, the emergence of this structure leads to the common prediction of disintermediation.

Insert Figure 4 about here

In summary, the transaction-cost perspective focuses on changes in the costs of various transactions due to factors such as changes in access to information. Analysis from this perspective leads to the prediction of disintermediation as buyers and sellers seek to save the costs of the agent and the industry structure shifts from Figure 2 to Figure 4. This shift would be reflected in a growing proportion of homes sold by owners (so-called FSBOs, or "for sale by owner"). However, data from our study region suggest that the FSBO rate remains steady at about 2% of the total number of transactions, while national figures presented by the National Association of Realtors show that FSBO transactions have remained steady for the last six years. There may be some skepticism given the source of the data. Another explanation for the apparent contradiction may be that the Internet is too new of a phenomenon in our study region to have had a significant impact.

From a transaction-cost perspective, another expectation (and perhaps best seen as an intermediate position) would be for agents to slowly "give ground." That is, we would expect to see agents offer their services piece-meal to consumers, that is, unbundling. For instance, an agent might focus on providing a select group of services such as MLS listings and mortgage services. There is some evidence of this behavior in the region we studied. For example, several agents are now offering limited support, such as a flat fee for entering data to the MLS or a pay-as-you-go arrangement for services such as advertising.

We might also expect that as the use of the Internet is legitimated, agents will face increasing competition from other groups that seek to use ICT to disseminate their own information. For example, mortgage firms, financial institutions, chambers of commerce, and other value-added players have also established Web sites and cross-affiliations influencing the real estate business. An increasing number of Web publications list FSBO properties. Through the use of the Internet and ICT, consumers are able to access information that formerly was only made available to agents. On the other hand, both Schmitz (2000) and Grover and Ramanlal (1999) note that intermediaries can also use ICT to manipulate the cost of a transaction. Specifically, intermediaries can increase transaction costs by further constraining access or adding complexity to goods and services to complicate cost comparisons. In other words, the flexibility of electronic markets works in both directions. Our current data reveal no such manipulations, though most agents encourage their clients (buyer or seller) to communicate through them. This allows the agents to intermediate any discussions or decisions relative to closing and provides the opportunity for direct manipulation.

A social-capital perspective

A social-capital perspective leads to conceptualizing the process of selling/buying real estate as a set of interactions set within social structures that the agents help to develop. These social structures define both how the

agent, buyer, seller (and other contributors) behave and guide the various transactions that make up the sale of a residential property. An agent builds a set of relations within (and because of) their social structures. These relations and structures are shaped by norms and values—both of the agent and the people with whom the agent interacts. For example, since most buyers need to secure a mortgage, real estate agents seek out mortgage brokers who will help their clients. In this way the social network, and especially the strong ties, represents the embedded nature of information relative to the closing process. That is, important information needed to move a house to close is distributed across the members of the real estate agent's social network. Thus, the ability to identify and draw on the proper person's expertise is one part of the real estate agent's value-adding expertise. Moreover, the agent is central to these links and their removal leads to structural holes (the missing connections between nodes that signal the absence of access to needed information, see Burt, 2000).

Figure 5 presents a graphic depiction of the structural dimension of agent social capital. This figure can be compared with the other models described above. In this view, it is the core networks the agents maintain and the interconnections among them that function as the coordination mechanisms. One value of a social network is that the well-connected members have more access to information than do poorly connected members. This shows up in the ability of well-connected network members to bridge sparsely connected social units (known as structural holes, see Burt, 1992). For example, real estate agents have large networks for buying/selling home compared to the typical buyer or seller. These agents can bridge the structural hole that most sellers and buyers face, making them invaluable to the transaction.

Insert Figure 5 about here

Theorizing from a social-capital perspective suggests that the increased use of ICT by real estate agents provides a means for these people to extend their social networks and increase their social capital (Eisenberg et al., 1985; Kraut, 1998). Increased connectivity (via cellular phones, pagers and email, often interconnected) allows a real estate agent to more easily maintain contacts with the members of their social networks. For example, in the regional market that serves as the basis for our research reported here, well-connected and successful agents maintain contact lists (databases) that may have 10,000 or more contacts (the metropolitan statistical area is nearly 500,000 people). The increasing use of certain ICT (such as cellular phones, fax and email) also make it easier for potential customers to contact the agent. And, as we mentioned earlier, an Internet presence can extend the agent's presence. Contemporary "web-savvy" agents often have their listings on personal Web sites, organizational Web sites (such as local franchise sites), cooperative sites (such as www.homehunter.com), and the National Association of Realtors' Web site (www.realtor.com).

Our study suggests that conceptualizing social capital in terms of their underlying, network-like structures, such as articulated by the strength of weak ties theory (Granovetter, 1973; 1982), provides insight into how real estate agents work (Crowston, Sawyer, & Wigand, 2001). The strength of weak ties theory suggests that the social network of any member is their primary resource for learning about the world. Participants in the network have

relationships with one another of varying strengths. Strongly tied-together members in a network tend to be more similar to each other than different, more likely to be available for each other, share more common interests, and interact more frequently. Conversely, weakly tied-together members in a social network tend to communicate less frequently, be more different than similar, and provide both more new information into the network and more access to other social networks. Relative to the uses of ICT some evidence of the value of such ties can be seen in the on-line chat groups (known as "homespeak forums") that are part of www.realtor.com.

Applied to the U.S. residential real estate domain, this suggests that agents with large social networks populated with more weak ties will have more social capital to draw upon. The more resource-rich agents will get more listings (via acquaintances) and will also be able to point prospective clients to others who might be able to provide value-adding services. The latter practice may result in various forms of desirable reciprocation with these others, thus widening the degree of the agent's connectedness and exposure. Simply, social networks are self-reinforcing (Burt, 2000).

Comparing the perspectives

Our data to date suggests that for real estate, the common focus on closing as a single transaction presents a useful but incomplete view of the nature of the industry and the potential effects of ICT. Like travel agents and stockbrokers, real estate agents are market intermediaries in that they coordinate the series of pieces that make up the transaction by connecting the buyer with the seller. However, real estate transactions are more complex and require the contribution of many different value-adding players. As a result, real estate agents are less replaceable in the process than stockbrokers or travel agents. This contradicts the potential for disintermediation suggested by market economics (Sarkar et al., 1995; Schmitz, 2000). In other words, the real estate business is not a "perfect" market in economic sense, it needs the support offered by real estate agents to run smoothly.

Gittell and Weiss (1997) note that considerable research has been conducted on the antecedents of coordination and on the structure of organizational networks, while research linking formal organizational practices and informal networks has been relatively neglected. The concepts of informal networks, social capital and relational coordination appear to be key to the agents' ability to safeguard their position as the market intermediary and coordinator of the real estate transaction process. Thus it is important to look at network-related activities in the real estate transaction process in order to understand how the agent coordinates and influences other value-adding players in the value chain. The further development of formal theories of social capital could lead to strategic application of these theoretical perspectives in the areas of electronic commerce.

Conceptualizing real estate agent's work as the development of social capital allows us to also view the process of a buy/sell as embedded in the social structures created by current contractual arrangements. For example, the closing step typically demands physical presence and paper-based transactions. Thus, an agent who can provide the seller (and/or buyer) with a competent lawyer maintains her position as a process facilitator while also drawing

on her social capital (to bring the lawyer in). Further, she also increases her social capital by adding the seller/buyer (or both) to her network of weak ties.

Such a socially rich perspective suggests that the real estate agent's knowledge of the transaction process and the network of value added players developed and maintained by the real estate agent serve to distinguish the real estate industry. Agents not only pass information back and forth as in a typical market, but also add value to the transaction process given their knowledge of the transaction process and the social capital that they possess. Further, their use of these networks forms the 'market' in which the transaction occurs (Swedberg, 1994).

Essentially, the residential real estate agent aggregates the services of the value-added players and coordinates the real estate transaction. Creating and maintaining this network of value added players, past customers, and potential future customers constitutes the main work of the real estate agent. Consumers choosing to conduct the real estate transaction on their own or to retain an agent for limited parts of the process may not have access to the larger network of value-added players that a real estate agent provides. Nor do most consumers have the transaction knowledge of the real estate agent. The real estate agent as a trusted intermediary is in a unique position to guide buyers and sellers through the numerous angles and steps in this complex, emotionally-laden, process. This, it seems, fulfills an important "hand-holding" function welcome to buyers and sellers during the often compressed, potentially frenetic time frame in which real estate closings occur.

The transaction-cost perspective helps us recognize that residential real estate closings have high transaction costs for at least three reasons. First, residential real estate is high in asset specificity in that the real estate is specific to a given transaction. Second, residential real estate requires that extensive information be supplied about the land and house. Third, residential real estate is high in uncertainty given the complexity and inevitability of contract modifications required in the transaction process. The transactions are also low in frequency given that generally buyers purchase few homes, which means that buyers and sellers are not very skilled in conducting the transactions.

These considerations suggest that a focus on transaction costs may be most appropriate in cases where the specific conditions outlined by transaction-cost economics for markets are met, namely in spot markets for commodity goods. Under these conditions, the goods being traded are fungible, buyers and sellers agree on their evaluation of the goods, and it is relatively easy for a buyer to know what they are getting. As a result, a single transaction can in fact be disassociated from others without loss. However, our work suggests that as goods become unique and/or as evaluations become idiosyncratic or require expertise to make, it becomes harder for a buyer to know what they are getting. As a result, any individual transaction must be supported by many other transactions. This interdependency makes it even more apparent that any one transaction is connected to a network of other transactions.

Drawing on this perspective, in Figure 6 we outline a suggested gradation of asset specificity ranging from water and energy to custom-designed homes. We expect a transaction focus to be most appropriate at the low end of

this scale and least appropriate at the high end. We note that the participants in any market are embedded in a social context (Burt, 2000; Swedberg, 1994). However, some transactions require less information from the context than do others. For instance, an on-line purchase of a CD occurs within the context of a person whose musical preferences are often know by others (friends, co-workers) and who learns of new CDs and new sources to buy CDs from the social network which she creates. At the time of the purchase, however, she may need little transaction support.

Insert Figure 6 about here

Is there any clear connection between transaction-cost and social-capital perspectives of ICT use? We think so, and point to Gittell's concepts of relational coordination (Gittell, 2000a, 2000b). This work builds on both coordination theory and organizational level conceptualizations of social capital. Relational coordination refers to the efforts of participants that show both an awareness of their relationship to the overall work process and to other participants in that process. Relational coordination encompasses both communication and relationship ties among participants. Her work has explored relational coordination in the airline (flight departures) and hospital industries. She finds that higher levels of relational coordination have a significant and positive impact on both quality and efficiency outcomes. This work has also identified specific coordination mechanisms, control mechanisms, human resource and industrial relations practices that serve to strengthen or weaken relational coordination. What this suggests is that a socially rich theory of market structures can be combined with a socially thin view of transactions to create a more comprehensive and potentially more robust conceptualization of the roles of ICT use in reshaping information-intensive work practices.

Conclusion

Our comparative approach provides a means to compare the kinds of insights offered by both the conceptual perspectives and to better delineate the conditions under which they are most useful. Even more importantly, we have illustrated with this analysis that in order to provide a more rounded and balanced view of ICT uses and their role in information-intensive work, such dual-perspective approaches are warranted. In this final section we highlight several of the implications for the practice of real estate. We also highlight implications for continued research on ICT use and related organizational/ industrial changes.

Implications for practice

Our analysis suggests that *dis*intermediation is less of a threat than *re*-intermediation. New value-added players are beginning to take on parts of the role of the agent as aggregators. Some of these new intermediaries are traditional players taking on larger roles, such as local real estate franchises. Other sources of re-intermediation are the myriad Web-based service providers. Perhaps the most notable *new* entrant may be Microsoft. They seek to leverage their technical competence and use of the Web as a means to become an intermediary (Crowston &

Wigand, 1999). The services provided by these new intermediaries lead to an unbundling of services, challenging the current percentage-based flat fee paid to agents at closing.

Agents are also beginning to un-bundle and specialize their services. This is seen in the teaming approach (where one agents focuses on buyers and the second on listings). As we noted at the outset, similar developments—re-intermediation and/or disintermediation—are observable in other industries as well. For example, travel agents also have reacted in part by unbundling their services. Some have started to charge flat service fees for booking a flight, making a hotel reservation, planning a travel itinerary, and so on. Real estate agents would similarly have to start charging fees for specific services rendered rather than the current approach of collecting a single commission for a bundle of services. However, our research indicates that this solution may not ultimately be to the advantage of the agent. In the real estate industry, unbundling lessens the agent's role as a coordinator of the entire transaction process and in turn weakens the strategic positioning and the degree of control possessed by the real estate agent in the value chain of the transaction.

For real estate agents, the increasing use of ICT provides a means to extend their social networks and thereby increase the potential for social capital. Further, there are opportunities for real estate agents to exploit ICT to add more transaction support/value. For instance, there are numerous local services conceivable that only real estate agents might be able to offer. These include developing locally-oriented sites that are available only to clients of agents and provide value-added information about local issues such a neighborhood data, school quality, sale/resale history, and so on. Much of this data is currently, and somewhat generically, provided free from the National Association of Realtors site (www.realtor.com). The data from our research suggests that the agents may be better positioned if they restrict access to such data to clients (such as the efforts by the site maintainers to minimize the ability of people to easily gather large data sets from this site). Moreover, the agents will be continually challenged to identify those services, possibly entirely new and previously un-offered services that add such value for their clients.

Implications for research

This research suggests that the changes in information-intensive work that ICT uses enable/demand differ depending on the conceptual perspective taken. From a transaction-cost perspective, disintermediation in the real estate industry seems quite clear and may be indicative of changes in other industries. That is, the findings from this study suggest that there are steps in the value-added process where use of ICT can reduce transaction costs. For example, the integrated use of voice-mail, pagers and cell phones allows agents to reduce the time delays in responding to calls during negotiating a closing and to more quickly reach potential buyers when a new listing is posted. Uses of ICT to reduce transaction costs of search and access are particularly relevant for industries where the transaction relies less on a series of coordinated steps to complete and/or where there is low asset specificity (e.g., Choudhury, 1997). Transaction-cost savings are likely to be less relevant, or relevant for only portions of knowledge-intensive processes where the steps have complex and multi-faceted inter-relationships.

A social capital view of the same set of changes provides a different view of market transactions. This perspective suggests that the value in using ICT is in part to enhance the building (and maintaining) of social capital. For example, Pisanis and Willcocks (1999) describe how social relations and personal networks are so pervasive in (and important to) the ship brokering industry that ICT-enabled market-making mechanisms have failed. Barrett's (1999) analysis of the uses of ICT in the London insurance market suggests that, again, social capital and social networks were the more dominant aspect of the market, both impeding and supporting the increased presence of on-line trading. Since the initial ICT-based systems did not reflect or enable existing social networks, they were not widely used and have not radically changed the practice of insurance. Those (smaller-scale) systems that did reflect existing social structures were used and have become embedded in the structures that now exist.

Understanding how the three components of social capital (structure, relation and cognition) are affected by ICT use provides a means to relate the work of agents to their roles as an intermediary during the buy/sell transaction. ICT use can affect all three components of social capital. For example, agents can use ICT, such as linking together voice mail, pager and cell phone, to develop and maintain their network of weak and strong ties. Use of ICT can also alter the relational aspects of social capital. In our work, findings suggest that real estate agents who use ICT to buffer themselves from clients (not returning calls, not checking/responding to email, not maintaining a current Web site) will weaken their relations. And ICT use can alter what is expected of an agent. For example, many prospective sellers expect that an agent will provide a Web presence for their listing, going beyond traditional advertising media.

A socially thin view of the residential real estate closing treats this effort as a market-based transaction. Such a perspective provides a limited approximation to the changes wrought by ICT. This view may also misrepresent the more nuanced aspects of the adaptations being made. A socially rich view on the same phenomena highlights a different set of uses of ICT. This perspective showcases the ways in which ICT are used to build and draw on the social relationships that underpin the actual transactions, to help guide the process of closing, and to invoke expertise as needed. The socially rich perspective highlights the communicative aspects of information while the socially thin perspective highlights the informational aspects of communication. This latter view treats information as discrete and portable. The socially rich perspective emphasizes the embedded nature of information and the importance of having links to these sources and the awareness to use them.

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Tables and Figures

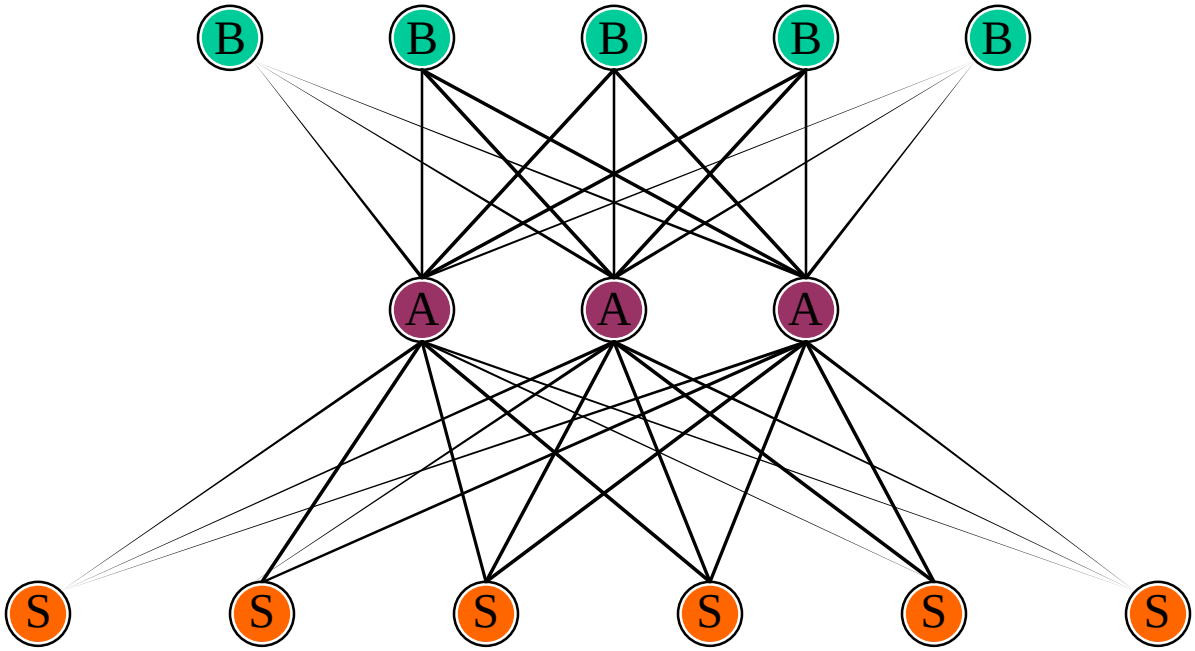

Figure 1. A centralized market, from Malone and Smith.

B = Buyers, S = Sellers, A = Agents. Lines represent communications links.

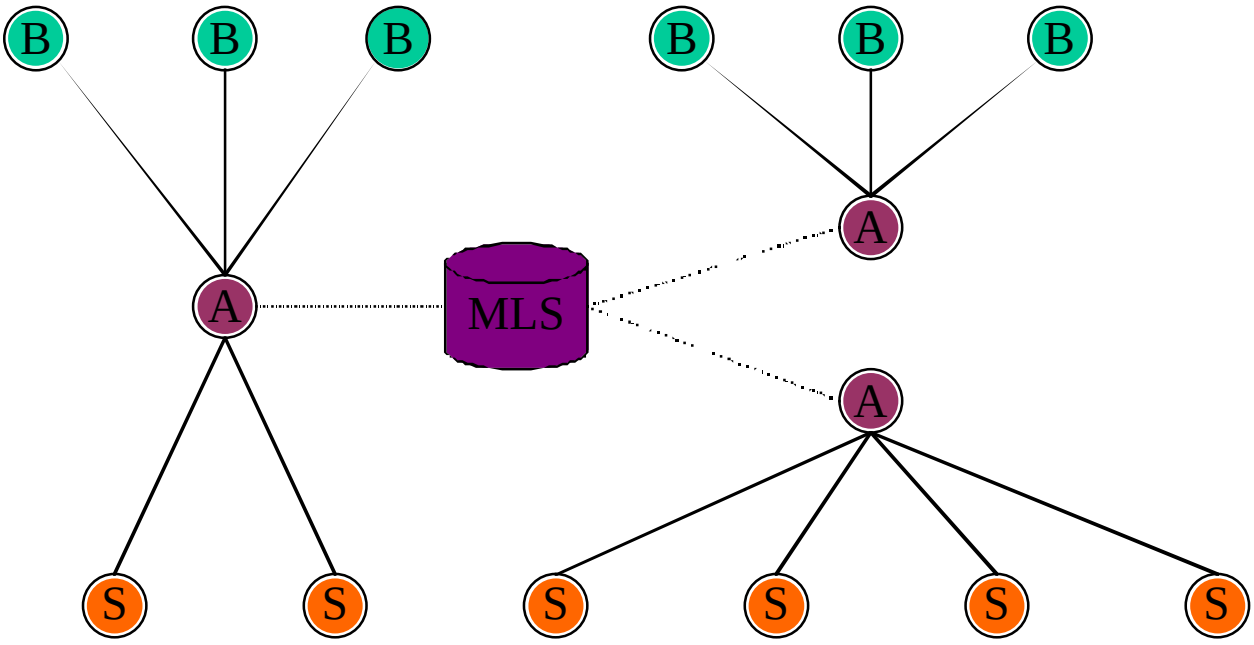

Figure 2. A centralized market in real estate, showing the role of the Multiple Listing Service (MLS).

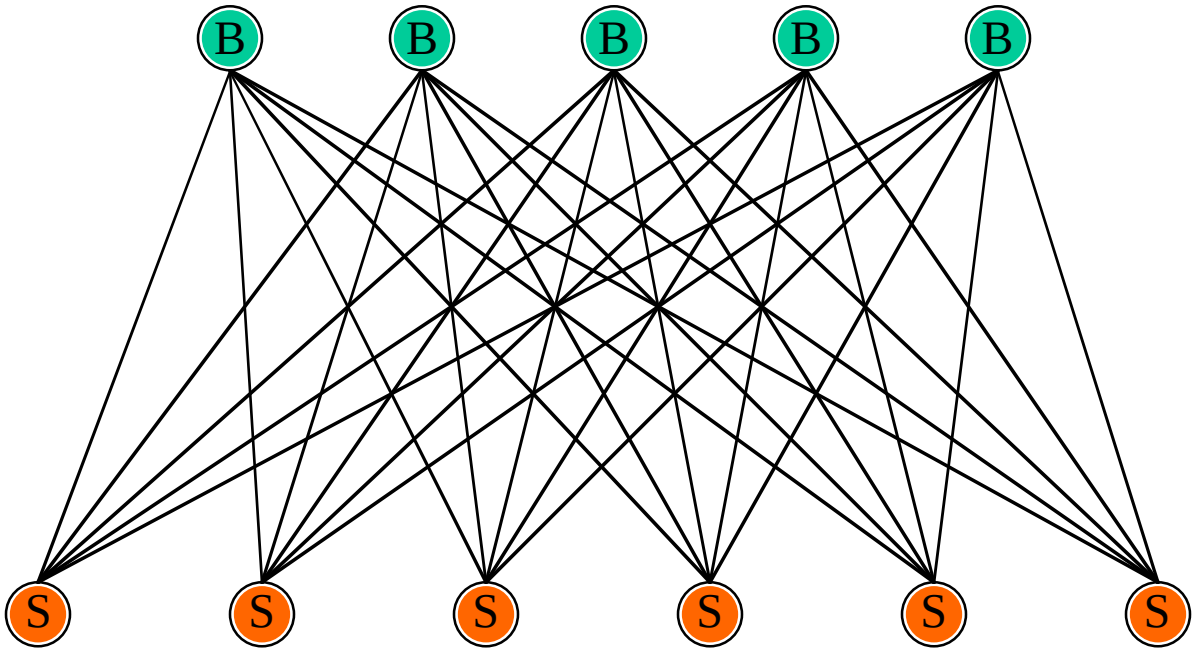

Figure 3. A decentralized market, from Malone and Smith.

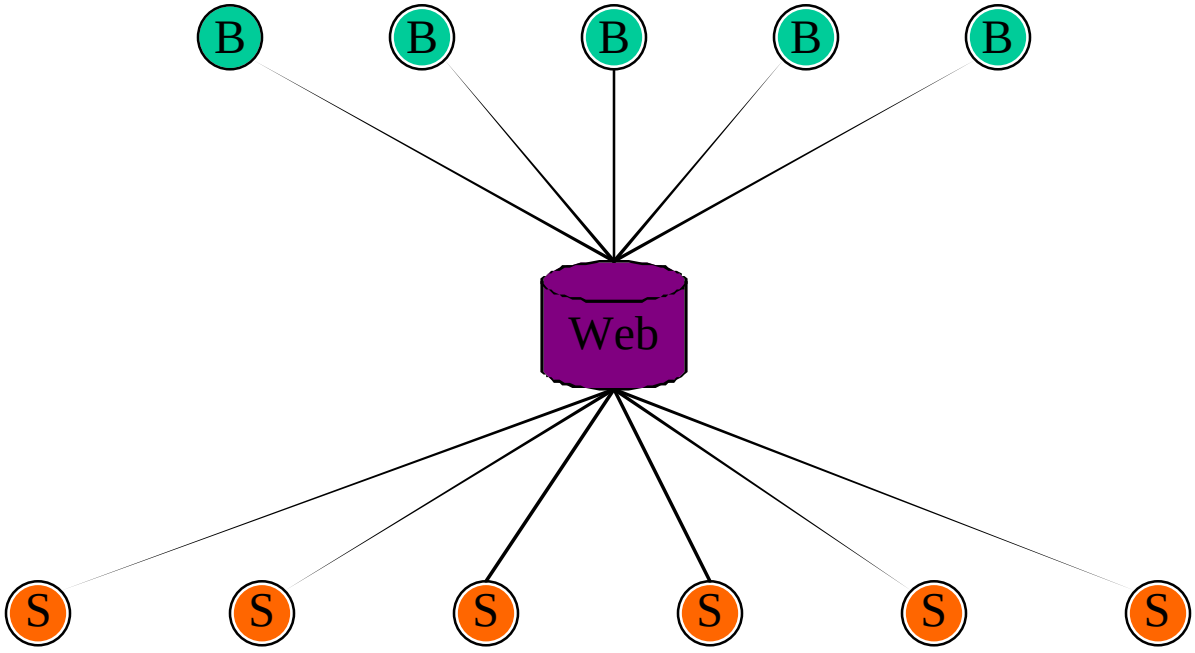

Figure 4. A decentralized market facilitated by a listings Web site.

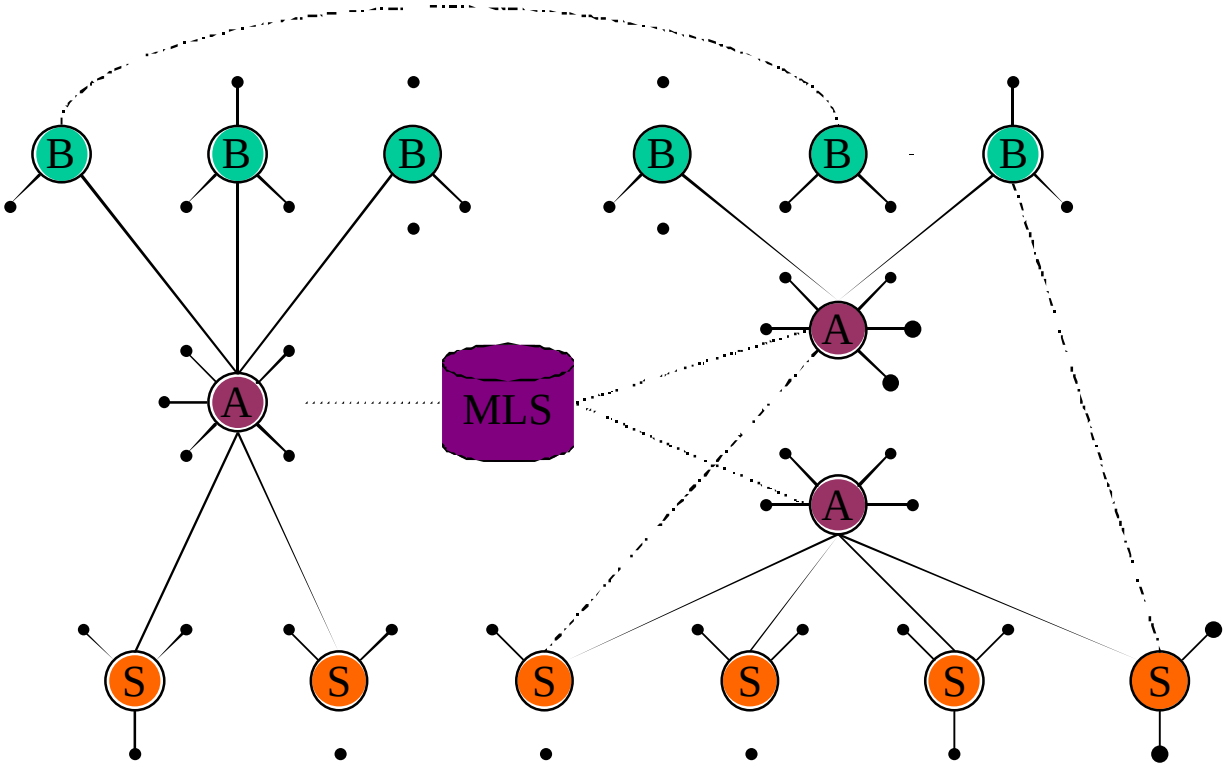

Figure 5. Real estate transaction embedded in a web of relationships.
Black circles indicate other social contacts. Dashed lines indicate contacts unrelated to the buy/sell transaction.

Figure 6. Varying levels of asset specificity create varying needs for description.

Table 1. Contrasting Transaction-cost and Social-capital perspectives.

Elements of Perspective	*Transaction Cost*	*Social Capital*
Transaction	Isolatable from context	Embedded in context
Role of Information	External to participants, transportable	Embedded in social networks
Role of Intermediaries	Replaceable by lower costs media	Central to the social networks
Agent's role	Based on explicit contracts	Driven by relations and ties among people
Social structures	Unimportant to transaction	Primary to closing the house
Roles of ICT	Decoupler of transactions, focused on information processing	Magnifier of social capital, focused on value of communicating

Table 2. Summary of Interviews

Interviewee (position/particulars)
Real Estate Agent (Experienced and successful female agent with a large national franchise, technology savvy. *Key informant: three interviews each of about 60 minutes)*
Real Estate Agent (Experienced and successful male agent with a large national franchise, not technology savvy. Interview lasted 50 minutes)
Real Estate Broker/Owner (Female owner and manager of local franchise of large national firm. Interview lasted 75 minutes)
Real Estate Broker/Manager (Male manager for one of four offices of local franchise of large national firm. Interview lasted 75 minutes)
Real Estate Agent (Male, not technology savvy, returning to work as agent with large national franchise. Interview lasted 40 minutes).
Real Estate Broker/Owner (Male, not technology savvy, owner of a small commercial & residential, solely-owned local company. Interview lasted 65 minutes)
Real Estate Agent (Male, not technology savvy, and just beginning in real estate, working for successful agent. Interview lasted 45 minutes.)
Real Estate Lawyer (Male, working for a medium-sized, local firm, specializing in real-estate and personal law. Interview lasted 35 minutes.)
Home Inspector (Male, working for himself. Interview lasted 20 minutes)
Mortgage officer/broker (Female, employed by large national mortgage corporation. Interview lasted 20 minutes and done over the phone.)
Executive Director, Local Association of Realtors (Female, not technology savvy. *Key informant. Two innterviews. The first interview lasted 90 minutes. Second interview lasted 45 minutes*).
Executive Director, Local MLS company (Female, not technology savvy. Interview lasted 55 minutes).